UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,577	08/17/2001	Shinji Negishi	SON-2196	2196

7590 09/16/2009

RADER, FISHMAN & GRAUER, P.L.L.C
1233 20th Street, NW, Suite 501
Washington, DC 20036

EXAMINER	
VAN HANDEL, MICHAEL P	

ART UNIT	PAPER NUMBER
2424	

MAIL DATE	DELIVERY MODE
09/16/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/931,577
Filing Date: August 17, 2001
Appellant(s): NEGISHI ET AL.

Christopher M. Tobin
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed July 16, 2009 appealing from the Office action mailed April 30, 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,953,506	Kalra et al.	09-1999

Appellant's admitted prior art in the Background of the Invention section of the published application US 2002/0031188

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

1. Claims **27-30**, **32-39**, **95-104** are rejected under 35 U.S.C. 102(e) as being anticipated by Kalra et al.

Referring to claim **27**, Kalra et al. discloses a data transmitting apparatus for transmitting a scene description that describes at least one elementary stream (ES) used to construct a scene (Abstract), comprising:

- an ES processing means that transfers at least one ES, which conforms to at least one of a transmission line state and a request issued from a receiving side (digital data is transcoded into adaptive, scalable streams)(col. 2, l. 27-30, 39-43; col. 3, l. 66, 67; col. 4, l. 1-13; col. 15, l. 35-50; col. 16, l. 18-24; & Fig. 1);
- a scene description processing means for transferring and modifying a scene description, in accordance with the at least one ES from the ES processing means, by adjusting the properties assigned to the ES within the scene description (a VRML scene graph must be modified to correspond to the adaptive streams)(col. 19, l. 47-64; col. 20, l. 47-50; col. 21, l. 61-67; col. 22, l. 37-53; & Fig. 17).

Referring to claim **28**, Kalra et al. discloses a data transmitting apparatus according to claim 27, further comprising:

- a memory means in which a plurality of predefined scene descriptions are stored corresponding to a plurality of possible qualities of the at least one ES (a bare bones scene graph and additive scene graphs corresponding to the adaptive streams are stored)(col. 21, l. 61-67; col. 22, l. 1; & Fig. 17);

- wherein the scene description processing means selects the scene description from among the plurality of scene descriptions stored in the memory means, and transmits the scene description (more levels of detail in the scene graph are transmitted depending on the performance of the client device)(col. 22, l. 1-53, 66-67 & col. 23, l. 1-3, 8-57).

Referring to claim **29**, Kalra et al. discloses a data transmitting apparatus/method according to claim 27, further comprising:

- a memory means in which at least one predefined scene description is stored (col. 20, l. 30-39);
- wherein the scene description processing means converts a predefined scene description read from the memory means into the scene description based on the corresponding quality of the at least one ES (col. 21, l. 61-67 & col. 22, l. 1), and transfers the scene description (col. 23, l. 40-43).

Referring to claim **30**, Kalra et al. discloses a data transmitting apparatus according to claim 27, wherein the scene description processing means encodes the scene description and transmits the scene description (col. 23, l. 8-27).

Referring to claim **32**, Kalra et al. discloses a data transmitting apparatus according to claim 27, wherein the scene description processing means transfers the scene description, which comprises information necessary for the receiving side to decode the at least one ES from the ES processing means (col. 23, l. 38-46).

Referring to claim **33**, Kalra et al. discloses a data transmitting apparatus according to claim 27, further comprising wherein the scene description processing means transfers a scene

description that specifies whether the at least one ES is to be used to construct a scene are used or not (col. 23, l. 28-30, 45-47).

Referring to claim **34**, the combination of Kalra et al. discloses a data transmitting apparatus according to claim 27, wherein the scene description processing means transfers a scene description whose complexity conforms to the at least one ES (col. 23, l. 47-57).

Referring to claim **35**, Kalra et al. discloses a data transmitting apparatus according to claim 34, wherein the scene description processing means transfers a scene description, wherein a first scene part within a scene is replaced with a second scene part whose complexity is different from the complexity of the first scene part, in accordance with the at least one ES (col. 24, l. 28-37).

Referring to claim **36**, Kalra et al. discloses a data transmitting apparatus according to claim 34, wherein the scene description processing means transfers a scene description, in which a scene part within a scene is removed or a new scene part is added to the scene, in accordance with the at least one ES (col. 23, l. 45-47 & col. 25, l. 9-11).

Referring to claim **37**, Kalra et al. discloses a data transmitting apparatus according to claim 34, wherein the scene description processing means modified a quantization step, in which a scene description is encoded, in accordance with the at least one of the transmission line state and the request issued from the receiving side, and the at least one ES (col. 5, l. 57-67).

Referring to claim **38**, Kalra et al. discloses a data transmitting apparatus according to claim 27, wherein the scene description processing means divides a scene description into a plurality of decoding units in accordance with the at least one of the transmission line state, the request issued from the receiving side, and the at least one ES (col. 21, l. 61-66).

Referring to claim **39**, Kalra et al. discloses a data transmitting apparatus according to claim 38, wherein the scene description processing means adjusts a time interval between time instants at which the receiving side decodes each of the plurality of decoding units into which a scene description is divided (col. 23, l. 40-50).

Referring to claim **95**, Kalra et al. discloses a data receiving apparatus for receiving a scene description that describes at least one elementary stream (ES) used to construct a scene, comprising:

- an ES decoding unit that receives at least one ES, which conforms to at least one of a transmission line state and a request issued from the data receiving apparatus (col. 15, l. 35-44; col. 23, l. 31-57; & Fig. 24);
- a scene description decoding unit for constructing a scene description, in which the properties assigned to the ES within the scene description conform to the at least one ES (col. 23, l. 60-67).

Referring to claim **96**, Kalra et al. discloses a data receiving apparatus according to claim 95, wherein the scene description is transmitted from a server side which includes a scene description processing unit that selects the scene description from among the plurality of scene descriptions stored in a memory, and transmits the scene description (col. 22, l. 1-53, 66-67 & col. 23, l. 1-3, 8-57).

Referring to claim **97**, Kalra et al. discloses a data receiving apparatus according to claim 95, wherein the scene description is transmitted from a server side which converts a predefined scene description read from a memory into a scene description based on the corresponding

quality of the at least one ES (col. 21, l. 61-67 & col. 22, l. 1), and transmits the scene description (col. 23, l. 40-43).

Referring to claim **98**, Kalra et al. discloses a data receiving apparatus according to claim 95, wherein the scene description specifies whether the at least one ES is to be used to construct the scene (col. 23, l. 28-30, 45-47).

Referring to claim **99**, Kalra et al. discloses a data receiving apparatus according to claim 95, wherein the scene description complexity conforms to the at least one ES (col. 23, l. 47-57).

Referring to claim **100**, Kalra et al. discloses a data receiving apparatus according to claim 99, wherein the scene decoding unit receives a scene description, wherein a first scene part within a scene is replaced with a second scene part whose complexity is different from the complexity of the first scene part, in accordance with the at least one ES (col. 24, l. 28-37).

Referring to claim **101**, Kalra et al. discloses a data receiving apparatus according to claim 99, wherein the scene description decoding unit receives a scene description, in which a scene part within a scene is removed or a new scene part is added to the scene, in accordance with the at least one ES (col. 23, l. 45-47 & col. 25, l. 9-11).

Referring to claim **102**, Kalra et al. discloses a data receiving apparatus according to claim 99, wherein the scene description is received in portions encoded based on a quantization step, in accordance with the at least one of the transmission line state, a request issued from the data receiving apparatus, and the at least one ES (col. 5, l. 57-67).

Referring to claim **103**, Kalra et al. discloses a data receiving apparatus according to claim 95, wherein the scene description is received in a plurality of divided parts encoded by a

transmitting apparatus in accordance with the at least one of the transmission line state, the request issued from the receiving side, and the at least one ES (col. 21, l. 61-66).

Referring to claim **104**, Kalra et al. discloses a data receiving apparatus according to claim 103, wherein the scene transmitting apparatus adjusts a time interval between time instants at which the data receiving apparatus decodes each of the plurality of divided parts into which the scene description is divided (col. 23, l. 40-50).

2. Claims **1**, **14**, **27-30**, **32-43**, **45**, **46**, **48-52**, **78**, **105-115** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kalra et al. in view of Appellant's admitted prior art (see corresponding publication US 2002/0031188 for relevant citations).

Referring to claims **1**, **14**, **40**, and **78**, Kalra et al. discloses a data transmission system/method comprising:

- a transmitting apparatus (stream server 400) that transmits a scene description (col. 19, l. 46-64; col. 23, l. 40-44; & Figs. 12-14, 18A-C, 21); and
- a receiving apparatus (client computer #1-N) that constructs a scene according to the scene description (col. 2, l. 39-43; col. 23, l. 31-57; & Figs. 12-14);
- wherein the transmitting apparatus comprises:
    - an elementary stream (ES) processing means that transfers at least one ES, which conforms to at least one of a transmission line state and a request issued from the receiving apparatus (col. 2, l. 27-30, 39-43; col. 3, l. 66, 67; col. 4, l. 1-13; col. 15, l. 35-50; & Fig. 1); and

  - a scene description processing means that transfers and modifies a scene description to conform to a corresponding quality of the at least one ES from the ES processing means by adjusting the properties assigned to the ES within the scene description (col. 19, l. 47-64; col. 21, l. 61-67; col. 22, l. 37-53; & Fig. 17).

Kalra et al. further discloses that the content is provided based on network bandwidth (col. 15, l. 35-44). Kalra et al. does not specifically disclose appending time information to the at least one ES and the scene description to allow the receiving apparatus to detect a delay in transmission. Appellant's admitted prior art discloses appending time instant information to data transmitted over a transmission line. A receiving terminal can use the time instant information to detect a delay in transmission from the time instant information and transmits the detected information to the transmitter (p. 1, paragraph 10). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the bandwidth detection of Kalra et al. to monitoring timing information in transmitted data packets, such as that taught by Appellant's admitted prior art in order to recover lost data.

Referring to claim **41**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, further comprising:

- a memory means in which a plurality of predefined scene descriptions are stored corresponding to a plurality of possible qualities of the at least one ES (col. 21, l. 61-67; col. 22, l. 1; & Fig. 17);

- wherein the scene description processing means selects the scene description from among the plurality of scene descriptions stored in the memory means, and transmits the scene description (col. 22, l. 1-53, 66-67 & col. 23, l. 1-3).

Referring to claim **42**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, further comprising:

- a memory means in which at least one predefined scene description is stored (col. 20, l. 30-39);
- wherein the scene description processing means converts a predefined scene description read from the memory means into the scene description based on the corresponding quality of the at least one ES (col. 21, l. 61-67 & col. 22, l. 1), and transfers the scene description (col. 23, l. 40-43).

Referring to claim **43**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, wherein the scene description processing means encodes the scene description and transmits the scene description (col. 23, l. 8-27).

Referring to claim **45**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, wherein the scene description processing means transfers the scene description, which comprises information necessary for the receiving side to decode the at least one ES from the ES processing means (col. 23, l. 38-46).

Referring to claim **46**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, respectively, further comprising

wherein the scene description processing means transfers a scene description that specifies whether the at least one ES is to be used to construct a scene are used or not (col. 23, l. 28-30).

Referring to claim **48**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, wherein the scene description processing means transfers a scene description, wherein a first scene part within a scene is replaced with a second scene part whose complexity is different from the complexity of the first scene part, in accordance with the at least one ES (col. 24, l. 28-37).

Referring to claim **49**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, wherein the scene description processing means transfers a scene description, in which a scene part within a scene is removed or a new scene part is added to the scene, in accordance with the at least one ES (col. 23, l. 45-47).

Referring to claim **50**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, wherein the scene description processing means modified a quantization step, in which a scene description is encoded, in accordance with the at least one of the transmission line state and the request issued from the receiving side, and the at least one ES (col. 5, l. 57-67).

Referring to claim **51**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 40, wherein the scene description processing means divides a scene description into a plurality of decoding units in accordance with the at least one of the transmission line state, the request issued from the receiving side, and the at least one ES (col. 21, l. 61-66).

Referring to claim **52**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data transmitting method according to claim 51, wherein the scene description processing means adjusts a time interval between time instants at which the receiving side decodes each of the plurality of decoding units into which a scene description is divided (col. 23, l. 40-50).

Referring to claim **105**, Kalra et al. discloses a data receiving method for receiving a scene description that describes the properties of at least one elementary stream (ES) used to construct a scene, comprising:

- receiving at least one ES, which conforms to at least one of a transmission line state and a request issued from a receiving side (col. 15, l. 35-44; col. 23, l. 31-57; & Fig. 24); and
- receiving a scene description in accordance with the corresponding quality of the at least one ES (col. 23, l. 60-67);

Kalra et al. further discloses that the content is provided based on network bandwidth (col. 15, l. 35-44). Kalra et al. does not specifically disclose appending time information to the at least one ES. Appellant's admitted prior art discloses appending time instant information to data transmitted over a transmission line. A receiving terminal can use the time instant information to detect a delay in transmission from the time instant information and transmits the detected information to the transmitter (p. 1, paragraph 10). It would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify the bandwidth detection of Kalra et al. to monitoring timing information in transmitted data packets, such as that taught by Appellant's admitted prior art in order to recover lost data.

Referring to claim **106**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein the scene description is selected from among a plurality of predefined scene descriptions corresponding to a plurality of possible qualities of the at least one ES (col. 22, l. 1-53, 66-67 & col. 23, l. 1-3, 8-57).

Referring to claim **107**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein the scene description is created by converting a predefined scene description based on the corresponding quality of the at least one ES (col. 21, l. 61-67 & col. 22, l. 1).

Referring to claim **108**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein the scene description further comprises information necessary for the receiving side to decode the at least one ES (col. 23, l. 38-46).

Referring to claim **109**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein the scene description specifies whether to use the at least one ES (col. 23, l. 28-30, 45-47).

Referring to claim **110**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein in the scene description, a first scene part is replaced with a second scene part, whose complexity differs from the complexity of the first scene part, in accordance with the at least one ES (col. 24, l. 28-37).

Referring to claim **112**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein in the scene description, a

scene part is removed or added, in accordance with the at least one ES (col. 23, l. 45-47 & col. 25, l. 9-11).

Referring to claim **113**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein the scene description is encoded in a quantization step, in accordance with the at least one transmission line state, the request issued from the receiving side, and the at least one ES (col. 5, l. 57-67).

Referring to claim **114**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 105, wherein the scene description is divided into a plurality of decoding units in accordance with at least one of the transmission line state, the request issued from the receiving side, and the at least one ES (col. 21, l. 61-66).

Referring to claim **115**, the combination of Kalra et al. and Appellant's admitted prior art teaches a data receiving method according to claim 114, wherein the scene description is divided in accordance with a time interval between time instants at which a receiving side decodes each of the plurality of decoding units (col. 23, l. 40-50).

(10) Response to Argument

Regarding claims **27-30**, **32-39**, and **95-104**, the appellant argues that the examiner erred in rejecting the claims under 35 U.S.C. § 102 as being unpatentable over U.S. Patent No. 5,953,506 to Kalra et al. The examiner respectfully disagrees for the reasons discussed below.

Regarding claims **1**, **14**, **27-30**, **32-43**, **45**, **46**, **48-52**, **78**, **105-115**, the appellant argues that the examiner erred in rejecting the claims under 35 U.S.C. § 103 as being unpatentable over Kalra et al. in view of The Background of The Invention section of the specification for the present application (AAPA). The examiner respectfully disagrees for the reasons discussed below.

Argument 1: The Examiner erred in rejecting claims 27-30, 32-39, and 95-104 under 35 U.S.C. § 102 as unpatentable over U.S. Patent No. 5,953,506 to Kalra et al. ("Kalra")

Claims 27-30, 32, 35-39 & Claims 95-98, 100-104

Regarding claims **27** and **95**, the appellant argues that Kalra et al. fails to teach or suggest an ES processing means that transfers at least one ES, which conforms to at least one of a transmission line state and a request issued from a receiving side [and] a scene description processing means for transferring and modifying a scene description, in accordance with the at least one ES from the ES processing means, by adjusting the properties assigned to the ES within the scene description. The appellant specifically argues that Kalra et al. lacks separate elementary streams and scene descriptions, because they are the same object, ie., the VRML format. The examiner respectfully disagrees.

Kalra et al. discloses an apparatus and method for encoding, storing, transmitting, and decoding multimedia information in the form of scalable, streamed digital data (see Abstract). A transcoder 10 converts standard digital multimedia data 12 into adaptive (or scalable) digital

streams 14, which are created so that subsets of the digital data allow for distortion free reproduction of images and sounds at different resolutions (col. 3, l. 66-67; col. 4, l. 1-6; & Fig. 1). Figure 2A illustrates that the adaptive digital streams 14 can be identified as having various components, specifically that of a base stream $14A_b$ and adaptive streams $14A_{1-n}$, as well as adaptive streams 16 and 18 (col. 4, l. 14-24 & Fig. 2A). A stream management module 20 obtains a profile from a multimedia device 22, and based upon that profile, selects the appropriate base and additive streams associated therewith. Stream management module then transmits these selected streams to the multimedia device, where they are decoded and displayed for the user to experience (col. 4, l. 24-32 & Figs. 2A, 2B). Figure 2B illustrates that various types of adaptive digital streams can be operated on by the stream management module and provided to the multimedia device (col. 4, l. 47-52 & Fig. 2B). The various adaptive streams chosen to be transmitted are based on an updated profile indicating detected client computer constraints and actual available bandwidth (col. 15, l. 35-65).

3D graphics transcoding requires a graphics transcoder, a graphics stream server, and client computers. At the beginning of a 3D transaction, global data and all or part of the spatial data structure, which describes the relative positions and sizes of the objects composing the scene is transmitted. Thereafter, a description of the objects in the leaf nodes of the spatial data structure is transmitted. The examiner interprets the spatial data structure, and list of objects within the nodes to be a scene description, as currently claimed. Following this, the geometry, texture, and material data is streamed in an on-demand basis and based upon the available network bandwidth and CPU constraints, as observed by the graphics server (col. 19, l. 47-64).

The examiner interprets the geometry, texture, and material data to be elementary streams (ES), as currently claimed.

Figure 18A illustrates the overall graphic data streaming format resulting from the graphic transcoding process. An initial stream 700 composed of essential global data 700A, spatial partitioning data 700B, and base data for visible scene graph leafs 700C is initially transmitted from a server to a client computer. Again, the examiner interprets this structural data to be a scene description, as currently claimed. After complete transmission of this initial stream, based on network and profile parameters, additional base data 702A, geometry data 702B, texture data 702C, material data 702D, and non-essential global data 702E are thereafter transmitted in dynamic streams 702 (col. 20, l. 14-27 & Fig. 18A). The examiner interprets additional base data and non-essential global data to be updates and modifications to the scene description and the geometry, texture, and material data to be elementary streams.

Kalra et al. explains the spatial data structure in more detail (col. 19, l. 62-64). The 3-D graphics adaptive streams use a standardized digital 3D format, the VRML data format (col. 19, l. 65-67 & col. 20, l. 1-7). As is known within the prior art, and as is noted in Description of the Related Art in Appellant's specification, VRML is one format used to describe a scene (p. 2, paragraph 15 of Appellant's published application US 2002/0031188, which describes VRML as an example of a format using a scene description). In Kalra et al., in order to obtain graphic adaptive streams that allow for base and additive streams of data to be transmitted between a server and a client computer, a transcoding process of the VRML format data into a graphic adaptive streams format is required. Figure 17 illustrates the 3-D transcoder (col. 20, l. 8-13 & Fig. 17). The input VRML data is first read and converted into an interim tree data structure that

captures the hierarchy of the graphics data structure and also the attributes of each of the objects (col. 20, l. 30-39 & Fig. 17). Once placed in this interim format, an optimized scene graph is produced by implementing a K-D tree for spatial localization (col. 20, l. 40-46 & Figs. 17, 19-21). Figure 19 illustrates data that represents a scene, with objects in the scene representing by O1-O9. The scene is first placed in a spatial data structure that allows the entire space to be defined by subspaces (nodes) (col. 20, l. 47-67). After dividing up the scene, the objects are partitioned as illustrated in Figure 20, resulting in the K-D tree illustrated in Figure 21 (col. 21, l. 35-41 & Figs. 20, 21). With respect to those sub-blocks that contain objects, each may have associated a geometry, a texture, and a material. Therefore, once the K-D tree has been computed in step 712A, a bare bones scene graph and remaining additive scene graph components are stored in memory (col. 21, l. 61-67 & Fig. 17). As noted previously, the examiner interprets this data within the scene graph to be a scene description, as currently claimed.

Step 714 follows so that the geometry, texture, and material data can be correlated to a particular object (col. 21, l. 61-67; col. 22, l. 1; & Fig. 17). In step 714A, for each object, there is a base mesh that corresponds to the simplest representation of that object, as well as a sequence of vertex split records that further define the geometry for that particular object and provide additional degrees of resolution. This geometry data is stored in memory. In step 714B, texture multi-resolution data is encoded so that there results base graphic texture data as well as additive graphic texture data that is stored in memory (col. 22, l. 4-15 & Fig. 17). This texture can be implemented as a single image, or a video sequence using adaptive streams of video for adaptive resolution of video texture (col. 22, l. 48-53). Similarly, in 714C, base and additive graphic

material data is operated upon and stored in memory so that material data can also be sent adaptively (col. 22, l. 4-15 & Fig. 17). The examiner notes that all of this geometric, texture, and material data multi-resolution data for each object is created separately from the base and additive scene graph that describes the structure of how the objects place within the scene, as described in col. 21, l. 61-67 and col. 22, l. 1-15, and as shown in Figure 17 (where the scene graph multires encoding is separate 712A from the object multires encodings 714)(col. 21, l. 61-67; col. 22, l. 1-15; & Fig. 17). The examiner interprets this data to be elementary streams, as currently claimed.

Figure 18B illustrates the data format for each of the various nodes in the spatial tree and geometry, texture, and material characteristics associated with an object. Each of the characteristics in the scene can be classified as being of a certain "type" and can be uniquely identified by an identifier. Since geometry data, material data and texture data are typically used on more than 1 object, this identification allows geometry, material or texture data to be related to an object. In the use of these objects, a dictionary mechanism acts as a look-up between the identifier and a data pointer to the data corresponding to the geometry, material or texture (col. 22, l. 16-30 & Figs. 18B, 18C). That is, the scene graph nodes contain data related to the structure of the scene and references to the geometry, material, and texture data. The actual geometry, material, and texture multi-resolution data is separate. Once the multi-resolution encodings relating to geometry, material, and texture characteristics are obtained for each object in a scene graph, all of these various characteristics are stored for streamlining when a user wishes to look at the data (col. 22, l. 66-67 & col. 23, l. 1-3).

A dictionary (look-up table) is used both at the server and client at the time the data is streamed. The dictionary stores information about different characters such as geometry, material, texture, and scene graph nodes, each of which have their own particular identifier, data pointer, priority and other characteristic specific attributes. The purpose of this is to identify objects both at the client and server by a common identifier so that references to the object can be made and to keep an account of how much of what data has been sent. The server has knowledge of all the information in the scene and hence a complete dictionary. The dictionary on the client gets created and updated as more data is streamed down to it (col. 23, l. 8-27 & Fig. 22). In step 716, scene graph node to object node mapping takes place, so that each of the objects in a scene are associated with one leaf or internal object node (col. 23, l. 28-30).

Communication between the server and client begins with an initial set up 750, followed by transmission of the base graphic adaptive stream data to the client in step 752. This base graphic adaptive stream data includes the global scene data and the K-D tree spatial partitioning data as shown in Fig. 18B. Based upon that data, in step 754 the current frame (or visible portion of the scene graph) is drawn. Thereafter, in step 756, performance statistics are provided to a level of detail module to compute new information required and to compute old information no longer needed. Thereafter, in step 758, based upon the computation and the level of detail module, messages to send desired data or stop undesired data are sent to the server from the client computer. Thereafter, in step 760, data is received from the server to allow for further rendering of the image. This additional information is then used to draw a new current frame (col. 23, l. 31-57 & Figs. 23-28).

Figure 25 illustrates the operation of decoder 800 in further detail. When a packet is received, its type is determined from the dictionary and the data pointer for that object is also extracted from the dictionary. If the type is a node, it refers to a node in a tree. For such data, the types of operations that are carried out include adding the node to the tree, associating a bounding box with that node, adding an object to the node, and associating the ids of texture, shape and material to an object in the node. Again, the node contains information on objects and ids referencing textures, shapes, and materials associated with those objects (as shown with respect to Node in Fig. 25). The examiner interprets this to be an update and modification to the scene description. The actual multi-resolution shape, material, or texture data referenced by the ids are stored in shape, material, or texture objects, respectively (as shown in with respect to Shape, Material, and Texture objects in Fig. 25). The examiner interprets these objects to be elementary streams, as currently claimed. As shown in both Figures 17 and 25, the structural scene graph data and its objects are not the same as the shape, material, and texture data objects (Figs. 17, 25). Scene graph objects, including nodes, contain references to shape, material, and texture objects, but not the shape, material, and texture content itself. Figure 17 shows that the multires encoding of the scene graph and bare-bones and remaining scene graph objects are created separately (712A) from the geometric, texture, and material multires encodings (714, 714A-714C)(Fig. 17). In step 716, scene graph node to object node mapping takes place, so that each of the objects in a scene are associated with one leaf or internal object node (col. 23, l. 28-30). Kalra et al. states that these dynamically received node object updates can add a node to the tree, add an object to the node, and associate texture, shape, and material ids to the object (col. 24, l. 20-27). Since the geometric, texture, and material data to be used and information on

whether the object is to be used at all is based on scene graph node objects transmitted from the server, the examiner maintains that Kalra et al. meets the limitations of transferring at least one ES, which conforms to at least one of a transmission line state and a request issued from a receiving side and a scene description means transferring and modifying a scene description, in accordance with the at least one ES from the ES processing means, by adjusting properties assigned to the ES within the scene description, as currently claimed.

Further regarding claims **27** and **95**, the appellant argues that Kalra et al. fails to recognize that the compression and reduction in data may require that the scene (or layout) of the data be modified to provide the user with a consistent and functional experience. The examiner respectfully disagrees. The examiner first notes that this language is not recited in the claims. Kalra et al. discloses that, based on previous frame performance statistics, viewport size, i.e., the size of the window in which the frame is rendered, can be increased or decreased (col. 25, l. 23-33 & Fig. 26). As such, the examiner maintains that Kalra et al. teaches modifying the scene (or layout) of the data.

Claim 33 & Claim 98

Regarding claims **33** and **98**, the appellant argues that Kalra et al. does not teach or suggest "wherein the scene description processing means transfers a scene description that specifies whether the at least one ES is to be used to construct a scene are used or not." The examiner respectfully disagrees. Kalra et al. discloses dynamically sending node objects to the client, referring to a node in the tree, that adds a node to the tree, associates a bounding box with that node, and adds objects to the node, including associating ids of texture, shape, and material

to the objects in the node (col. 24, l. 16-27 & Fig. 25). Kalra et al. further discloses, based on the previous frame performance statistics, determining whether to render each different visible object, and communicating this information to the server (col. 25, l. 23-38 & Fig. 26). As such, the examiner maintains that Kalra et al. teaches "wherein the scene description processing means transfers a scene description that specifies whether the at least one ES is to be used to construct a scene are used or not," as currently claimed.

Claim 34 & Claim 99

Regarding claims **34** and **99**, the appellant argues that Kalra et al. does not teach or suggest that "the scene description processing means transfers a scene description whose complexity conforms to the at least one ES." The examiner respectfully disagrees. Kalra et al. discloses that a dynamically transmitted node object adds objects to the node, and associates the ids of texture, shape, and material to the objects in the node (col. 24, l. 23-27). The referenced shape objects contain information to update geometry data for the shape. The referenced material objects add sophisticated material in formation. The referenced texture objects update a texture component (col. 24, l. 28-37). Since the node objects reference the shape, material, and texture objects, the examiner maintains that Kalra et al. meets the limitation of "the scene description processing means transfers a scene description whose complexity conforms to the at least one ES," as currently claimed.

<u>2. The examiner erred in rejecting claims 1, 14, 27-30, 32-43, 45, 46, 48-52, 78, 105-115 under 35 U.S.C. § 103 over Kalra in view of The Background of The Invention section of the specification for the present application ("AAPA").</u>

Claim 1; Claim 14; Claims 27-30, 32, 35-39; Claims 40-43, 45, 48-52; Claim 78; & Claims 105-108, 116-120

Regarding claims **1**, **14**, **27-30**, **32**, **35-39**, **40-43**, **45**, **48-52**, **78**, **105-108**, and **116-120**, the appellant argues that neither Kalra et al. nor AAPA teaches or suggests modifying the scene itself to account for changes to the ESes. The examiner respectfully disagrees. The examiner notes that these arguments have been addressed with respect to claims 27 and 95 in section 1 above.

Claim 33; Claim 46; & Claim 109

Regarding claims **33**, **46**, and **109**, the appellant argues that Kalra et al. fails to teach or disclose the removal of elements from a scene. The examiner respectfully disagrees. The examiner notes that these arguments have been addressed with respect to claims 33 and 98 in section 1 above.

Claim 34

Regarding claim **34**, the appellant argues that Kalra et al. fails to teach or suggest having the complexity of the scene description depend or conform to the complexity of the ES. The

examiner respectfully disagrees. The examiner notes that these arguments have been addressed with respect to claim 34 in section 1 above.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Michael Van Handel

/Michael Van Handel/

Examiner, Art Unit 2424

Conferees:

Chris Kelley

/Christopher Kelley/

Supervisory Patent Examiner, Art Unit 2424

Chris Grant

/Christopher Grant/

Supervisory Patent Examiner, Art Unit 2421